

REMARKS/ARGUMENTS

In response to the Office Action of October 06, 2005, Applicant requests re-examination and reconsideration of this application for patent pursuant to 35 U.S.C. 132.

Claim Status/Support for Claim Amendments

Claims 1-9, 11-20, 22-30, 32-44, 46-50 are currently pending in the instant application. Claims 1, 11-13, 18, 26, 33-34, and 37 have been amended.

No new matter has been added by the amendments to the claims made herein. Support for these amendments can be found in the specification as originally filed, see for example, page 42, lines 6-14; page 43, lines 11-20; page 46, line 4- page 47, line 11.

Rejection under 35 USC 103(a)

Claims 1-12 and 26-36 again stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Cohen et al. (US 5,173,218). Cohen et al., (column 1, line 51; to column 2, line 7; column 2, lines 44 et seq; column 3, lines 12-36 and 40; column 4, lines 13 et seq; column 5, lines 66; examples and claims) is alleged to disclose the formation of a porous flexible plasticized structure (column 1, lines 53 et seq) employing chemiluminescent compositions with multiple particle

size distributions of polymeric particles. Cohen et al., at (column 3, lines 13-36) is further alleged to disclose methods of making the materials and to characterize the slurry compositions as capable of being cast, molded, extruded and blow molded. Said characterization is alleged to be consistent with a "fluidized solid" as claimed.

The Examiner asserts that the patent to Cohen et al., differs from the claims in the characterization of the slurry composition as a "fluidized solid" and in the use of functional language defining the amount of second particulate effective to yield a fluidized solid admixture. Cohen et al., (examples, particularly example 1) is further alleged to disclose the formation of a thick paste of a fine particle size (200 nm to 1.5 microns) followed by curing and the addition of a second particle size (medium size 70-75 microns and large 150 microns) to form a very thick smooth mixture. The Examiner thus concludes that it would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ paste or thixotropic slurries with the multiple particle size polymers disclosed in the Cohen et al., reference as very thick smooth mixtures.

Applicants respectfully disagree with the Examiner's assertion that the claimed subject matter is obvious. First, Applicants notice that in the outstanding rejection of the

claims, the Examiner states that the methods of making the material and slurry compositions of Cohen et al., appear to be consistent with a "fluidized solid" as claimed. However, the "fluidized solid" limitation was removed from the claims in the response filed July 25, 2005. Moreover, the new limitations currently recited the independent claims which limit the chemiluminescent reactant composition to a "moist, packable, and formable powder" do not appear in the outstanding rejection under Cohen et al., and do not seem to have been considered by the Examiner. Thus, clarification of the rejection is hereby respectfully requested.

Although Applicants do not agree with the outstanding rejection, in the interest of compact and efficient prosecution the independent claims have been further amended herein to more accurately disclose the present invention. The claims now recite a moist, packable and formable powder chemiluminescent reactant composition having a chemiluminescent reactant component and a first particulate polymeric resin in amounts effective to yield a uniform dispersion upon admixture thereof; and a second particulate polymeric resin in an amount effective to yield a packable and formable powder upon admixture with the uniform dispersion. Specifically, the claimed powder composition is defined by a homogenous mixture of distinct particles having sufficient cohesive properties to permit the composition to be

formed into any desired shape both with or without a mold.
Emphasis added. All recitations to "slurry" have been removed from the claims by Applicants in the interest of clarity.

As discussed in the specification as originally filed, beginning at page 8, Cohen et al., disclose a combination of PVC polymer resins to produce a porous, flexible, chemiluminescent structure from liquid slurries. The processes taught by Cohen et al., see Example 1, focus on producing products which are made by pouring a liquid slurry mixture into molds, which is then cured in the mold to form the resultant chemiluminescent product. As defined in the instant specification and commonly accepted in the art, a "liquid slurry" refers to a fluid that tends to seek its own level when pored. As such, the liquid slurry of Cohen et al., and hence, the resulting structure is limited to the shape of the mold into which the slurry is poured and pools. In addition, the PVC resin particles of the Cohen et al., do not remain distinct. All of the resin particles of Cohen et al., are dissolved and absorbed to form a homogenous smooth liquid mixture which is then poured into the form (see column 6, lines 45-51 of Cohen et al.) This is in contrast to the presently claimed invention where the powder chemiluminescent composition of the present invention consists of distinct, solid, individual particles.

Although Cohen et al., represents an improvement in the art, the formulas and processes utilized therein tend to produce chemiluminescent structures with a relatively tough and non-porous "skin" wherever the slurry has been in contact with the mold during the curing process. This skin is easily recognized as a darker and more transparent region of the pad and is highly impermeable. This skin is created during the curing process by an inability of the inherently dense liquid slurry to draw in air (or other gasses). As discussed in the specification beginning at page 8, during the curing process air is drawn into the product to replace the volume occupied by solvents which become absorbed into the PVC resin particles. This process continues as air is drawn down to ever increasing depths within the product as first the upper regions of the product cure and then successively lower regions of the product cure. It is this inclusion of air into the product during the curing process which primarily determines the percent of interstitial pore space and hence absorptiveness of the product.

Consequently, a more dense liquid slurry of Cohen et al., possesses an intrinsically low degree of porosity with no interstitial air spaces that air can enter into the composition during the curing process from the exposed surfaces of the product. Thus, the resulting chemiluminescent structure of

Cohen et al., is incapable of uniformly absorbing liquid activator solution and as such, yields poor light output of the device. The skin represents wasted material from which little usable light may be produced.

It has been unexpectedly discovered by the present inventors that in order to achieve a significantly uniform porous product, a chemiluminescent reactant composition should be in the form of a moist, packable and formable powder defined by a homogenous mixture of distinct, individual particles. This is critical and significantly different than the more dense liquid slurry taught in Cohen et al. The individual and distinct particles of the present invention form a powder composition with an intrinsically high degree of porosity and interstitial air spaces that allow air to enter into the composition during the curing process from the exposed surfaces of the product. The individual and discreet particles in the powdered material are critical to the curing process of the resultant product. It has also been discovered by the present inventors that the resultant chemiluminescent product made from the present inventive powder compositions provides immediate and significant improvement in the time required for complete chemiluminescent activator reagent absorption and corresponding light output. Emphasis added.

With respect to the Examiner's asseveration that the present invention appears to be a "difference in degree rather than kind," Applicants point out that Cohen et al., specifically "teaches away" from a powder composition which uses lower oxalate to resin ratios like those employed in the present invention. Specifically, Cohen et al., recite a range of oxalate: PVC resin ratios in the study shown in TABLE III (column 8, lines 7-25). Table III reports the total light output (TLOP) for the various ratios tested. Cohen et al., sets forth an oxalate: resin range from about 0.9:1.0 to about 1.7: 1.0. Cohen et al., states that the light output increases and then levels off at a ratio of about 1.4: 1.0. Moreover, Cohen et al., specifically states that when lower oxalate /PVC ratios are employed, the resultant chemiluminescent structures are allegedly flaky and cannot be handled (see column 8, lines 10-11 of Cohen et al.)

Referring now to the attached pictures, labeled here as FIGS 1A-2 (PRIOR ART), a chemiluminescent reactant solution was prepared in a manner similar to that disclosed in Example 1 of Cohen et al. The inventive composition shown in FIGS. 3A, 3B and 4 were prepared according to the present invention as disclosed in the specification beginning at page 38, line 19. It is important to note that the ratio of oxalate to resin used in the

present invention (shown in FIGS. 3A-4), is 1.0 (oxalate): 1.6 (resin), well below those in Example 1 of Cohen et al., which are about 1.4 (oxalate): 1.0 (resin), the optimum ratio theorized by Cohen et al., . Thus, Cohen et al., effectively teaches away from the lower oxalate to resin employed in the present invention.

As to the question of leading away or "teaching away" it has been held that it is improper to combine references where the reference teach away from their combination. A prior art reference that "teaches away" from the claimed invention is evidence of nonobviousness (see *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)). The court has held that a reference may be said to teach away when a person of ordinary skill, upon [examining] the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.

Furthermore, submitted herewith is a declaration of Earl Cranor, a co-inventor of the present invention. The declaration and corresponding pictures provide an evidentiary showing of unexpected results and novelty of the inventive powder composition verses the liquid slurry composition of Cohen et al. The Examiner indicated during the telephonic interview of May

19, 2005 that any evidence supporting the differences between the compositions could be presented and would be considered. The compositions shown in the attached figures 1A, 1B, 2, 3A, 3B and 4 do not represent new experimentation as they were prepared in the manner similar to that disclosed in Example 1 of Cohen et al., and according to the present invention as disclosed in the specification beginning at page 38, line 19.

Referring again to the attached pictures, labeled here as FIGS 1A-2 (PRIOR ART), the chemiluminescent reactant solution was prepared in the following manner. First, a pre-slurry was prepared by stirring together approximately 18.5 grams of a PVC resin (Geon Corp. #121) to approximately 400. grams of an oxalate solution (PML B oxalate). The mixture is then heated to 100 to 110 C and stirred for about 30 minutes until the PVC polymer is fully dissolved. The liquid slurry is then prepared by adding about 500 grams of the pre-slurry to about 263 grams of polymer resin (Geon Corp. #221) and 79 grams of polymer resin (Geon Corp. #466). Next, the mixture is stirred until smooth and free of lumps, see attached corresponding pictures labeled FIG. 1 A and 1B. The resultant chemiluminescent reactant composition of Cohen et al., (Example 1) as shown in the aforementioned figures is clearly a pourable, liquid slurry that seeks its own level when pored. As illustrated in the figure 1A and 1B, the liquid

slurry is limited to the shape of the mold into which it is poured, unlike the present invention as currently claimed. FIG. 2, is a picture of the resultant chemiluminescent product after it has cured in an oven inside the mold for about 10 minutes at 120 C.

This is in direct contrast to the present invention shown in pictures corresponding to FIGS. 3A-B and 4. In this experiment, described in the specification at page 38, line 20, the pre-slurry is prepared by dissolving approximately 2 grams PVC resin (Geon Corp. #121) with 98 grams of a chemiluminescent reactant solution which is exemplified herein as an oxalate solution. Next, the mixture is then heated to 100 to 110 C and stirred until the PVC polymer is fully dissolved. Then 150 grams of PVC resin (Geon Corp. #466) is added to the mixture and stirred vigorously to mix and moisten all of the PVC resin (Geon Corp. #466) until the resultant chemiluminescent reactant composition forms a moist powder that is packable and formable, as shown FIGs. 3A and 3B. FIG. 4 is a picture of the resultant chemiluminescent product after it has cured in an oven inside a substantially identical mold used in FIGS. 1A and 1B, for about 10 minutes at 120 C.

Therefore, Applicants contend that, contrary to the assertions by the Examiner, sufficient evidence has been

provided which support the fact that the use of a packable and formable powder chemiluminescent reactant composition (FIGS. 3A-3B) is distinct from the liquid slurry reactant composition used by Cohen et al (FIGS. 1A-1B). In particular, the use of a packable and formable powder chemiluminescent reactant composition defined by individual particles having sufficient cohesive properties are critical features which produce unexpected results in that the powder composition may be shaped, processed, or otherwise manipulated with or without a mold/form. The inventive composition creates a product wherein the porosity reduces the time required for complete chemiluminescent activator reagent absorption and provides a uniform light output throughout the product. Accordingly, Applicants respectfully request that this rejection under 35 USC 103(a) now be withdrawn

Claims 13-25 and 37-50, as previously presented, stand rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al, US 5173.218. as applied to claims 1-12 and 25-37 above, and further in view of Holland et al, US 5,158,349, and Roberts, US 3,808,414.

Cohen et al admittedly further differs from claims 13-25 and 37-45 in the multidimensional chemiluminescent reactive system wherein the reactants are separate until the desired time

of use. The Examiner indicates that Holland et al., (figures and columns 2-5) and Roberts (figures and column 2, lines 1-37, particularly 16-20) disclose chemiluminescent package systems having multiple compartments that may be open to mixing reactive components. Specifically, Holland et al., discloses concentric tubules, wherein when the inner tubule is ruptured, the chemiluminescent materials react resulting in chemiluminescence.

Roberts discloses a package, wherein when the clip is removed the reactive components mix and react resulting in chemiluminescence.

The Examiner further indicates that these references are combinable because they both teach chemiluminescent compositions, methods of making and packaging therefore, and concludes that it would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to employ multicomponent packages of Holland et al., and Roberts with the Cohen et al., materials to form a chemiluminescent effect and the advantage of storage and preserving said chemiluminescent effect until a desired time.

In view of the deficiencies pointed out in Cohen et al., above, it is respectfully submitted that the claims, as instantly amended, are now free of the prior art rejection.

Since the Cohen et al., reference teaches a thick paste of particles only as an intermediate, there is a clear demarcation

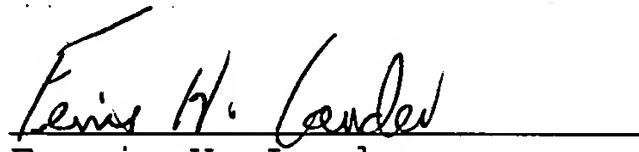
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between the Cohen et al., disclosure of a thick paste intermediate and the instantly claimed packable and formable powder chemiluminescent reactant composition. Applicants contend that this is indeed a difference in kind, and there is no motivation to combine the thick paste of Cohen et al., with the secondary references, as indicated in the outstanding Office action, the rejection thereof ought to be withdrawn and the claims passed to issue.

CONCLUSION

In light of the foregoing remarks, amendments to the claims, favorable reconsideration of the application is courteously requested. Should there be any remaining issues which can be resolved via an Examiner's Amendment, the Examiner is urged to call the undersigned in order to expedite the prosecution of this application.

Respectfully submitted,


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